

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

| | |
|---|---|
| Date of mailing (day/month/year) 08 February 2001 (08.02.01) | |
| International application No. PCT/GB00/02294 | Applicant's or agent's file reference J00041395WO |
| International filing date (day/month/year) 13 June 2000 (13.06.00) | Priority date (day/month/year) 15 June 1999 (15.06.99) |
| Applicant MULLINS, Dennis, Roy | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
22 December 2000 (22.12.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|--|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer S. Mafla Telephone No.: (41-22) 338.83.38 |
|---|--|

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

MUSKER, David, Charles
R.G.C. Jenkins & Co.
26 Caxton Street
London SW1H 0RJ
ROYAUME-UNI

| | |
|---|---|
| Date of mailing (day/month/year) 12 June 2001 (12.06.01) | IMPORTANT NOTIFICATION |
| Applicant's or agent's file reference J00041395WO | |
| International application No. PCT/GB00/02294 | International filing date (day/month/year) 13 June 2000 (13.06.00) |

| | | |
|---|---|---|
| 1. The following indications appeared on record concerning: | | |
| <input checked="" type="checkbox"/> the applicant | <input type="checkbox"/> the inventor | <input type="checkbox"/> the agent <input type="checkbox"/> the common representative |
| Name and Address ICO SERVICES LIMITED 1 Queen Caroline Street London W6 9BN United Kingdom | State of Nationality GB | State of Residence GB |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |
| 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning: | | |
| <input type="checkbox"/> the person | <input type="checkbox"/> the name | <input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence |
| Name and Address ICO SERVICES LIMITED Symphony House High Street Cowey Cowey Business Park Uxbridge Middlesex UB8 2AD United Kingdom | State of Nationality GB | State of Residence GB |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |
| 3. Further observations, if necessary: | | |
| 4. A copy of this notification has been sent to: | | |
| <input checked="" type="checkbox"/> the receiving Office | <input type="checkbox"/> the designated Offices concerned | |
| <input type="checkbox"/> the International Searching Authority | <input checked="" type="checkbox"/> the elected Offices concerned | |
| <input checked="" type="checkbox"/> the International Preliminary Examining Authority | <input type="checkbox"/> other: | |

| | |
|---|--|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Authorized officer Lazar Joseph Panakal |
| Facsimile No.: (41-22) 740.14.35 | Telephone No.: (41-22) 338.83.38 |

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

MUSKER, David, Charles
R.G.C. Jenkins & Co.
26 Caxton Street
London SW1H 0RJ
ROYAUME-UNI

Date of mailing (day/month/year)

18 June 2001 (18.06.01)

Applicant's or agent's file reference

J00041395WO

IMPORTANT NOTIFICATION

International application No.

PCT/GB00/02294

International filing date (day/month/year)

13 June 2000 (13.06.00)

1. The following indications appeared on record concerning:



the applicant



the inventor



the agent



the common representative

Name and Address

MULLINS, Dennis, Roy
22 Kennington Palace Court
Sancroft Street
London SE11 5UL
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:



the person



the name



the address



the nationality



the residence

Name and Address

MULLINS, Dennis, Roy
23 Kennington Palace Court
Sancroft Street
London SE11 5UL
United Kingdom

State of Nationality

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State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:



the receiving Office



the designated Offices concerned



the International Searching Authority



the elected Offices concerned



the International Preliminary Examining Authority



other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Christine Carrié

Telephone No.: (41-22) 338.83.38

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|---|---|--|
| Applicant's or agent's file reference J00041395W0 | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/GB 00/ 02294 | International filing date (day/month/year) 13/06/2000 | (Earliest) Priority Date (day/month/year) 15/06/1999 |
| Applicant ICO SERVICES LIMITED et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of Invention is lacking (see Box II).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

METHOD OF REGISTERING A SATELLITE TELEPHONY TERMINAL

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

7

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 00/02294

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04B7/185 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04B H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | WO 97 46036 A (COMSAT CORP) 4 December 1997 (1997-12-04) page 6, line 23 -page 12, line 11 --- | 1,8-12 |
| A | WO 97 01225 A (NEDERLAND PTT ;MAATMAN JOHANNES JOZEPH (NL); ZIJLEMA PETER (NL)) 9 January 1997 (1997-01-09) page 16, line 21 -page 19, line 12 page 20, line 29 -page 21, line 16 --- | 1,7-9 |
| A | EP 0 808 037 A (ICO SERVICES LTD) 19 November 1997 (1997-11-19) cited in the application column 4, line 11 - line 45 column 5, line 23 - line 46 column 6, line 26 - line 56 column 7, line 52 -column 9, line 24 column 12, line 16 - line 58 --- -/-- | 1,7-9 |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

29 September 2000

Date of mailing of the international search report

06/10/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Baas, G

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 00/02294

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| P,X | <p>WO 99 33198 A (ERICSSON GE MOBILE INC) 1 July 1999 (1999-07-01) page 5, line 14 -page 6, line 7 page 7, line 4 -page 9, line 9 -----</p> | 1,8-12 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/02294

| Patent document cited in search report | | Publication date | | Patent family member(s) | Publication date |
|---|---|---------------------|----|----------------------------|---------------------|
| WO 9746036 | A | 04-12-1997 | US | 6067452 A | 23-05-2000 |
| | | | EP | 0901738 A | 17-03-1999 |
| WO 9701225 | A | 09-01-1997 | NL | 1000628 C | 24-12-1996 |
| | | | AU | 698475 B | 29-10-1998 |
| | | | AU | 6126196 A | 22-01-1997 |
| | | | EP | 0834224 A | 08-04-1998 |
| | | | JP | 3057205 B | 26-06-2000 |
| | | | JP | 10511831 T | 10-11-1998 |
| | | | US | 6064858 A | 16-05-2000 |
| EP 0808037 | A | 19-11-1997 | GB | 2301988 A | 18-12-1996 |
| | | | AU | 2903897 A | 09-12-1997 |
| | | | CA | 2205618 A | 17-11-1997 |
| | | | WO | 9744918 A | 27-11-1997 |
| | | | JP | 11509715 T | 24-08-1999 |
| WO 9933198 | A | 01-07-1999 | US | 6064882 A | 16-05-2000 |
| | | | AU | 2006999 A | 12-07-1999 |

PATENT COOPERATION TREATY

PCT

REC'D 28 DEC 2001

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|---|---|--|
| Applicant's or agent's file reference J00041395 WO | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/GB00/02294 | International filing date (day/month/year) 13/06/2000 | Priority date (day/month/year) 15/06/1999 |
| International Patent Classification (IPC) or national classification and IPC H04B7/185 | | |
| Applicant ICO SERVICES LIMITED et al. | | |



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 9 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☒ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

| | |
|---|---|
| Date of submission of the demand 22/12/2000 | Date of completion of this report 21.12.2001 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized officer Ciccarese, C Telephone No. +49 89 2399 7302  |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02294

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-3,5,7-15,17-19, as originally filed
21-24

4,6,16,20 as received on 15/11/2001 with letter of 13/11/2001

Claims, No.:

1-15 as received on 15/11/2001 with letter of 13/11/2001

Drawings, sheets:

1/9-9/9 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02294

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

see separate sheet

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|------|----------------------|
| Novelty (N) | Yes: | Claims |
| | No: | Claims 1, 3, 6, 8-12 |
| Inventive step (IS) | Yes: | Claims |
| | No: | Claims 2, 4, 5, 7 |
| Industrial applicability (IA) | Yes: | Claims 1-12 |
| | No: | Claims |

2. Citations and explanations
see separate sheet

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item I

Basis of the report

1. The amendments filed with the letter dated 13 November 2001 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendments concerned are the following:

all the amendments of the claims.

For this reason, this report is based on the published version of the claims.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The following document is referred to:

D1: WO 97 46036

2. As to claim 8, document D1 discloses (cf in particular figures 4 and 8 and corresponding text), applying the terminology of said claim:

a user terminal for a satellite communications system, said terminal being operable to transmit data (Channel request, see figure 8 of D1) specifying a switch node (page 10 of D1, lines 3 to 6) to be used for communication with that terminal, said data being indicative of the identity of said switching node and not of the identity of the user or the user terminal.

Claim 8 of the present application therefore cannot be considered as novel in the light of D1 (Article 33(2) PCT).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02294

3. For the same reasons, claims 1 and 9 are not new (Article 33 (2) PCT).
4. The features introduced in claims 3, 6, 10, 11 and 12 are also known from document D1. The above mentioned claims are therefore also not novel (Article 33 (2) PCT).
5. The features of claims 2, 4, 5 and 7 are part of the routine techniques which are normally used by a skilled person. These claims are therefore not inventive (Article 33 (3) PCT).

Re Item VI

Certain documents cited

1. Document WO 99 33198 A prima facie seems to disclose the content of the application.

Re Item VII

Certain defects in the international application

1. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

network, it might be thought that the invention could be implemented simply by providing a look-up table mapping each user terminal IMSI to a switch node. However, this is unsatisfactory because, for security reasons, the majority of registrations with the network do not involve the transmission of the IMSI. Instead, on registration, a Temporary International Mobile Subscriber Identity is allocated, and used in future registrations where possible. For security reasons, the TMSI is uncorrelated with the identity of the user or terminal and hence, it is unsuitable for the purposes of the invention.

10 According to a further aspect of the invention, therefore, the data transmitted is indicative of the switch node to be used, rather than the user. Thus, security is maintained.

Particularly preferably, the data comprises an indication of the last switch used by the terminal, together with a flag indicating that that switch is to be used again. Thus, the data can be present in signals both from terminals which require use of a specific switch node and terminals which do not, the latter sending a different flag value to indicate that use of the previous switch node is not mandatory.

20 Thus, the invention is able to allow certain terminals to select use of a switch node which will give simpler connection, since it is closer to the source or destination of most of their calls. Further, where (as described in our earlier application number EP 0808037) traffic is carried on the terrestrial

Figure 5 illustrates schematically the disposition of satellites forming part of Figure 1 in orbits around the Earth;

Figure 6 illustrates the data rates carried between components on Earth;

5 Figure 7 is a flow diagram showing schematically the process performed by the network on initial registration of a terminal;

Figure 8 (comprising Figures 8a and 8b) is a flow diagram showing the process performed in the network to allocate a temporary identification;

10 Figure 9 (comprising Figures 9a and 9b) is a flow diagram showing the process performed by the user terminal and the network respectively on a subsequent registration; and

Figure 10 is a flow diagram modifying the process of Figure 7 in a second embodiment of the invention.

FIRST EMBODIMENT

15 Referring to Figure 1, a satellite communications network according to this embodiment comprises mobile user terminal equipment 2a, 2b (e.g. handsets 2a and 2b); orbiting relay satellites 4a, 4b; satellite Earth station nodes 6a, 6b; satellite system gateway stations 8a, 8b; terrestrial (e.g. public switched) telecommunications networks 10a, 10b; and fixed
20 telecommunications terminal equipment 12a, 12b.

Interconnecting the satellite system gateways 8a, 8b with the Earth station nodes 6a, 6b, and interconnecting the nodes 6a, 6b with each other, is a

by the node 6a. Alternatively, it may take place on an established signalling channel as a re-registration process initiated either by the terminal 2a or the node 6a.

In a step 1004, the IMSI is passed from the Earth station node 6a to the database station 15 via a signalling link 60. At the database station 15, the IMSI is looked up in a registration look up table. This look up process is conveniently performed in parallel with other look up operations such as the supply of authentication data from the database station 15. For each IMSI stored in the table, there is a corresponding entry indicating whether the status of the user is "normal" or "special". The significance of these entries will be discussed below. The entry is signalled back from the database station 15 to the node 6a.

Where (step 1006) the entry indicates that the user terminal 2a is of "normal" status, the allocation of an Earth station node proceeds (shown generally as step 1008) conventionally; it may be based, for example, on a comparison of the position of the mobile user (determined, as discussed above by delay and Doppler measurements) and the position of the nodes 6, to allocate the mobile user to the closest node. Alternatively, it may be based upon present and predicted link quality as disclosed in our earlier application WO 96/16488, incorporated herein in its entirety by reference.

For international mobile subscriber identities where the subscriber is indicated as having "special" status, an additional entry is stored in the table,

Accordingly, in step 1216, the node 6a determines the state of the flag. If set, the last used node 6b is re-allocated to the user terminal 2a, and a signalling link is set up to that node 6b which then controls the subsequent call via the satellite base station portion 22 of the node 6a, as discussed above.

5 On the other hand (step 1216), if the flag is not set, a suitable node is allocated (for example node 6c or 6d) in step 1218, in the same fashion as in step 1008 of Figure 7. The new allocated node receives from the communicating node 6a the identity of the last allocated node, to enable the retrieval of authentication and other data for communication with the user
10 terminal 2a in known fashion.

 Thus, a one bit flag can be used, together with the identity of the last registered node, to ensure that the satellite network always allocate the same node 6b to the user terminal 2a. The user terminal 2a does not itself need to store or generate any special data indicating that it falls into a particular
15 category, or indicating what the identity of its allocated Earth station node should be; this information is initially derived from the subscriber identity number (IMSI) by the system, and then passed back to be temporarily held on the user terminal 2a between subsequent re-registrations.

 In this fashion, it is not necessary to repeatedly send the IMSI over the
20 air, which improves confidentiality and security of communication.

CLAIMS

1. A method of registering a satellite telephony user terminal with a system comprising one or more earth stations for communication with said user terminal via one or more satellites; and one or more switch nodes
5 interconnected therewith by a terrestrial network; the method comprising;
receiving, from the terminal, data specifying a switch node to be used for communication with that terminal; and
allocating that switch node as the node via which calls to and from the user terminal should be directed.
10
2. The method of claim 1, further comprising;
determining whether said data is present, and if not;
allocating a said switch node on other criteria.
- 15 3. The method of claim 2, further comprising;
determining the position of said user terminal; and
allocating a said switch node on the basis of said position and that of the switch nodes.
- 20 4. The method of any preceding claim, in which the data comprises;
an indication of the last switch node allocated to said user terminal.

5. The method of claim 4 appended to claim 2, in which the data further comprises;

an indication of whether said last switch node should be used again or not.

5

6. The method of any preceding claim, further comprising the steps of;
receiving, from the terminal, data indicative of the identity of the user or the user terminal;

determining therefrom a switch node to be used for communication
10 with that terminal; and

allocating that switch node as the node via which calls to and from the user terminal should be directed.

7. A method of registering a satellite telephony user terminal with a
15 system comprising one or more earth stations for communication with said user terminal via one or more satellites; and one or more switch nodes interconnected therewith by a terrestrial network; the method comprising;

determining whether data has been received from the terminal, which is indicative of the identity of the user or the user terminal;

20 if so,

determining therefrom a switch node to be used for communication with that terminal; and

allocating that switch node as the node via which calls to and from the user terminal should be directed;

if not;

determining whether data has been received from the terminal, which
5 is indicative of a switch node to be used for communication with that terminal and not of the identity of the user or the user terminal; and

allocating that switch node as the node via which calls to and from the user terminal should be directed;

if not;

10 allocating a said switch node on other criteria.

8. A user terminal for a satellite communications system, said terminal being operable to transmit data specifying a switch node to be used for communication with that terminal, said data being indicative of the identity of
15 said switch node and not of the identity of the user or the user terminal.

9. A network control component of a mobile satellite communications system comprising one or more earth stations for communication with a satellite telephony user terminal via one or more satellites and one or more
20 switch nodes interconnected therewith by a terrestrial network; said component being operable to register a said user terminal with said system; the component comprising;

means for receiving, from the terminal, data specifying a switch node to be used for communication with that terminal; and

means for allocating that switch node as the node via which calls to and from the user terminal should be directed.

5

10. The component of claim 9 which comprises one of said earth stations.

11. The component of claim 9 or claim 10, which further comprises one of said switch nodes.

10

12. A satellite system network component for performing the process of any of claims 1 to 7.

10/009734

17 DEC 2001

531 Rec'd PCT

FACSIMILE MESSAGE

TO: European Patent Office
FAX NO: 00 49 89 2399 4465
FROM: R.G.C. Jenkins & Co.
NO. OF PAGES: 21

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JENKINS

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Internet: www.jenkins-ip.com

Our Case: DCM/APP/J00041395WO

13 November 2001

European Patent Office,
Directorate General 2,
D-80298 Munich,
GERMANY.

Dear Sirs,

International Patent Application No. PCT/GB00/02294
ICO Services Limited
Method of Registering a Satellite Telephony Terminal

We file herewith amended pages 25-29, to replace claims pages currently on file. We file also a marked up set of pages.

Briefly, for the Examiner's assistance, it will be seen that the amendments have the following effects:

1. In the new independent claims 1, 8, 10 and 12 (previously 1, 7, 8 and 9), the features are added to clearly explain the distinction over the prior art.
2. Multiple dependencies have been eliminated in former claims 4, 5 and 12.
3. New claims 2, 9, 11 and 13 has been introduced with consequential renumbering.

Additionally, corrected pages 4, 6, 16 and 20 are enclosed together with marked up pages showing the corrections.

Summary of the Prior Art

In a first embodiment, D1 provides a satellite communications system in which a home gateway is selected for mobile users in a first embodiment, based on a regional association, or based on a calling traffic profile of the mobile terminal. Thus, for example, a mobile which is always calling (or being called by) terminals in one country has a home gateway selected close to that country.

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In a second embodiment, the user terminal is specially adapted to store a table of dial code prefixes and associated home gateways, and on initiation of an outgoing call, to select a home gateway from the table based on a dialled number and to attempt to register with that home gateway to place the call.

The two embodiment appear to operate separately.

We agree with the Examiner that this document is the closest. Of the other citations, WO 99/33198 (which was published after our priority date) selects base station and MSC using the called number on a call-by-call basis. Networks select a base station and sends to mobile in a message, and the mobile then attempts to re-register with that base station. The other citations are less relevant.

Summary of the Present Invention

The present invention allows a selection of a home node for communication with user terminals in several different modes, depending on the user terminal. For example some users may need to be registered using least cost routing (as disclosed in the citation mentioned by the Examiner) whilst others, for security reasons, may wish to communicate only with a given home node. The technical problem is therefore to provide a system for enabling a selection of home nodes in different ways for different terminals.

Obviously, this could be done in many ways; the solution adopted according to independent claims 1, 8 (previously 7), 10 (previously 8), and 12 (previously 9), is to provide a system on the ground with terminal data for each terminal which indicates a mode for allocating a home node to that terminal, and to receive control data from the terminal itself, and to allocate a node based jointly on the control data and the terminal data.

The citation is not even concerned with the same technical problem as the invention, and therefore cannot teach the solution employed.

By contrast with the citation, the citation does not send control data which is not based on the dialled number; the citation uses the dialled number to derive a node to be used. Further, the citation does not provide data stored on the ground identifying a switch node allocation mode for each terminal. Further, in the citation, the terminal attempts to register directly with the node it has selected, whereas accordingly to the patent, a node is allocated by the network depending both on the terminal data indicating the allocation mode, and on the control data received from the terminal.

By the use of the claimed features, the present invention allows a sophisticated terminal selection process without requiring substantial enhancements to the functionality of the terminal. In the citation, the terminal must be modified to incorporate a substantial table of prefix numbers (of which there are a large number, as the Examiner will be aware) to switch nodes, and must include programming to register with the desired switched node. Mobile terminals are (and were at the priority date) of limited storage capacity. By contrast, the present invention allows the selections to take place with the mobile terminal merely storing and transmitting control data, and the decision taking place on the ground.

The additional feature of new claims 2 and 11 is the sending of the control data to the mobile terminal, where it is stored, for retransmission on a subsequent switch node allocation processes. The mobile terminal can therefore be made "dumb" or "transparent" to the node selection process performed, reducing the adaptation required of the terminal required still further.

The additional feature of claim 5 is that the control data comprises data indicating the last switch used. By storing and returning this data, the mobile terminal is enabled to inform the network (even a part of the network with which it has not previously registered) of the node to be used without revealing its international mobile subscriber identity number.

According to claim 6, the control data comprises an indication of whether or not to use to the previously used node. Thus, depending on the switched node allocation mode, a terminal can be sent data for repeating back to the network which will indicate that it either should use the last-used node (to keep the terminal "locked" to a particular node for security or other reasons in one allocation mode) or should not (in which case least cost or other routing criteria can be used in a second terminal allocation mode). Thus, terminals can instruct the network how to allocate nodes, but without being "aware" of this themselves.

Claim 8 indicates a terminal allocation process based on three different allocation modes; this is not even hinted at in the citation.

Claim 9 adds the limitation that the invention relates to a non-geostationary satellite communication system. This is very different to all of the citations, which relate to geostationary systems, in which the nodes to be used for a given call are always repeatable and related only to terminal position of the called and calling parties. With non-geostationary systems, the technical problem of allocating nodes is far more complex since the nodes to be used depend also on satellite position. None of the art suggests how a non-geostationary node allocation process might be carried out.

For the reasons above, it is believed that all claims are inventive over the cited art.

In due course, the Examiner may like to know that we shall be making similar amendments in the European regional phase. We look forward to the issuance of the International Preliminary Examination Report in due course, but if any points should be in doubt the Examiner is welcomed to telephone the undersigned.

Yours faithfully,

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Enc.